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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,731

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EXAMINER

ZHENG, LOIS L

ART UNIT

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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,731	Applicant(s) STRASSER ET AL.	
	Examiner LOIS ZHENG	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claim 9 is amended in view of applicant's amendment filed 20 May 2009.

Therefore, claims 9-16 are currently under examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 9 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al. US 3,824,122 (Cook), and further in view of Grisik US 4,004,047 (Grisik).

Cook teaches a diffusion coating process comprising applying a diffusion coating powder pack to the metal component to be coated, applying a powder masking pack to an area not to be coated with the diffusion coating, and heat treating coated metal component at 1975-2200°F (col. 1 lines 52-59, col. 2 lines 6-10). Cook further teaches the diffusion coating process takes place in either a two-piece retort (Fig. 1, col. 2 lines 20-29) or a one-piece retort (Figs. 5A-5E, col. 8 line 24 – col. 9 line 21).

However, Cook does not explicitly teach that the coating material is in the form of a paste.

Grisik also teaches a diffusion coating process wherein the diffusion coating material in the form of a paste can be applied directly to the metal component surface

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and let dry or can be applied in a powder mixture pack to the metal component(col. 4 lines 36-55).

Regarding claim 9, it would have been obvious to one of ordinary skill in the art to have substituted the application of a diffusion coating pack in the process of Cook with the technique of applying a coating material in the form of a paste as taught by Grisik with expected success since Grisik teaches that both are functionally equivalent methods for applying a diffusion coating material. The claimed solidification of the paste to form a donor pack is inherently taking place in the process of Cook in view of Grisik.

In addition, the two-piece retort or the one-piece retort as taught by Cook reads on the claimed packed bed reactor, and Cook in view of Grisik inherently teach the claimed "step of placing the area of the metal component to be coated and a region of the component which is not to be coated in a packed bed reactor".

Furthermore, the diffusion coating pack(i.e. donor pack) and the powder masking pack(i.e. diffusion-blocking powder pack) as taught by Cook in view of Grisik are both located in the two-piece or one piece retort(i.e. packed bed reactor).

Regarding claims 11-12 and 16, Cook further teaches that the metal component is turbine motor blade made of nickel base super-alloy and the masking powder pack comprising Ni_3Al (col. 2 lines 26-27, 30-31 and 57-59).

Regarding claims 13-15, Cook further teaches that suitable coating powders are described in US Patent No, 3,257,230, which discloses that the diffusion coating powders further comprises aluminum, chromium and activator such as 1% vaporizable halogen in the forms of ammonium fluoride(col. 6 lines 19-26 and 58-60). Since US

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Patent No, 3,257,230 is incorporated into Cook by reference, Cook teaches the claimed amount of ammonium fluoride activator.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of Grisik, and further in view of Sievers US 4,352,840(Siever).

The teachings of Cook in view of Grisik are discussed in paragraph 5 above. However, Cook in view of Grisik do not explicitly teach that the metal component is covered with a porous separating layer containing alumina before the application of the coating paste.

Siever teaches a diffusion coating process comprising applying an alumina containing layer prior to application of the diffusion coating material in order to greatly enhance erosion resistance of the metal component(col. 3, Example 1).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the step of applying an alumina coating as taught by Siever prior to the application of the diffusion coating material in the process of Cook in view of Grisik in order to greatly enhance erosion resistance in the metal component as taught by Siever.

In addition, Siever further teaches that the alumina coating is dried. Therefore, the binder material in the alumina coating would have evaporated in the process of Cook in view of Grisik and Siever, leaving behind a porous separating layer as claimed.

5. Claims 9 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. US 2005/0095358 A1(Park), and further in view of Cook.

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Park teaches a diffusion coating process comprising applying a paste of diffusion aluminide coating onto a high pressure turbine blade, solidifying the paste to form a donor material, and heat treating the coated turbine blade to a temperature of about 500-1150°C(paragraphs [0018-0020]). The diffusion aluminide coating of Parker further comprises 2-6% of activator such as ammonium chloride or ammonium fluoride (paragraphs [0019]). Parker further teaches that its coating process is compatible with advanced masking techniques(paragraph [0013]).

However, Park does not explicitly teach that the masking technique utilizes a diffusion-blocking powder pack as claimed.

The teachings of Cook are discussed as set forth in paragraph 4 above.

Regarding claim 9, it would have been obvious to one of ordinary skill in the art to have incorporated the Ni_3Al containing masking powder pack and the retort as taught by Cook into the diffusion coating process as taught by Park in order to allow selective coating and protect the areas not intended to be diffusion coated from the diffusion coating material as taught by Cook.

In addition, the two-piece retort or the one-piece retort as taught by Cook reads on the claimed packed bed reactor, and Park in view of Cook inherently teach the claimed "step of placing the area of the metal component to be coated and a region of the component which is not to be coated in a packed bed reactor".

Furthermore, the diffusion coating pack(i.e. donor pack) and the powder masking pack(i.e. diffusion-blocking powder pack) as taught by Park in view of Cook are both located in the two-piece or one piece retort(i.e. packed bed reactor).

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Regarding claims 11-12, Park in view of Cook teach the claimed Ni_3Al containing diffusion-blocking powder pack.

Regarding claims 13-15, Park in view of Cook teach the use of claimed activator in an amount that substantially overlaps the claimed activator amount of 0.2-5wt%. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed activator amount range from the disclosed range of Park in view of Cook would have been obvious to one skilled in the art since Park in view of Cook teach the same utilities in their disclosed activator amount range.

Regarding claim 16, Park in view of Cook teach the claimed turbine motor.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park in view of Cook, and further in view of Sievers.

The teachings of Park in view of Cook are discussed in paragraph 7 above. However, Park in view of Cook do not explicitly teach that the metal component is covered with a porous separating layer containing alumina before the application of the coating paste.

Siever teaches a diffusion coating process comprising applying an alumina containing layer prior to application of the diffusion coating material in order to greatly enhance erosion resistance of the metal component(col. 3, Example 1).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the step of applying an alumina coating as taught by Siever prior to the application of the diffusion coating material in the process of Park in view of Cook in order to greatly enhance erosion resistance in the metal component as taught by

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Siever. In addition, Siever further teaches that the alumina coating is dried. Therefore, the binder material in the alumina coating would have evaporated in the process of Park in view of Cook and Siever, leaving behind a porous separating layer as claimed.

Response to Arguments

7. Applicant's arguments filed 20 May 2009 have been fully considered but they are not persuasive.

In the remarks, applicant argues that Cook teaches a two-piece retort comprising separate tubes 11 and 13 separately house the diffusing coating pack and the powder masking pack, which differs from the instant claims which require the donor pack and the diffusion-blocking powder pack to be in the same packed bed reactor.

The examiner does not find applicant's argument persuasive because Cook teaches both a two-piece retort (Fig. 1) and an one-piece retort(Figs. 5A-5C), both of which reads on the claimed packed bed reactor. Tubes 11 and 13 of the two-piece retort as shown in Fig. 1 of Cook shares a common holding space for housing the metal workpiece(i.e. it takes both tubes 11 and 13 to hold the same metal workpiece). Cook further teaches that the position of the diffusion coating pack and the powder masking pack can be reversed for coating the bottom of the metal component(col. 9 lines 13-21). Therefore, the examiner maintains that the two-piece retort as taught by Cook reads on the claimed packed bed reactor, based on the broadest reasonable interpretation.

Applicant further argues the entire retort 10 as taught by Cook cannot be considered as the claimed packed bed reactor because any alitaton, siliconization and/or chromation takes place only in tube 11 not the entire retort in Cook.

The examiner does not find applicant's argument persuasive for the same reasons set forth above. Additionally, Cook further teaches one-piece retorts that hold both the diffusion coating pack and the powder masking pack(Figs 5A-5C), which allows the alitation, siliconization and/or chromation to take place in the one-piece retort(i.e. packed bed reactor).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

LLZ